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09/991,234

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EXAMINER

DIVECHA, KAMAL B

ART UNIT

PAPER NUMBER

2151

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.:

09/991,234

Applicant(s)

CHANDRA ET AL.

Examiner

KAMAL B. DIVECHA

Art Unit

2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-9, 23-25 and 30-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-9, 23-25, 30-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Action is in response to communications filed 11/5/07.

Claims 6-9, 23-25, 30-33 are pending in this application.

Claims 1-5, 10-22, 26-29 were previously cancelled.

Response to Arguments

Applicant's arguments filed on 11/5/07 with respect to claims above have been considered but are moot in view of the new ground(s) of rejection, as necessitated by the substantial amendments.

In response filed, applicant acknowledges the following:

- a. Rekhtar discloses that the edge router has a common table containing VPN-identified entries (remarks, pg. 8). Rekhtar discloses VPN related routing information as (1) either a separate FIB table for each VPN or a common FIB table for all the VPNs; and (2) stored in TIB (remarks, pg. 8).

This acknowledgement can be evidenced based on the following teachings:

Rekhtar, at column 33 line 36, clearly states:

“Also, although we have described VPN-specific information as being stored in separate tables because the approach seems most convenient, there is no reason in principle why a common table containing VPN-identifying entries could not be used instead”.

In other words, Rekhtar teaches maintaining a common table, i.e. a single EGP table for the VPNs such as VPN V, VPN W, etc.

As per Rekhtar, the common FIB and/or EGP table is built and/or modified by external routing protocols, such as External Gateway Protocol (EGP). For the sake of concreteness, we assume here that the external routing protocol used herein is ...Border Gateway Protocol (BGP) (See col. 12 L41-67).

The customer-enterprise routers may also use an IGP...But the customer enterprise's nodes that have access to each other only through the provider network, i.e. through the edge node in an ISP, do not use an IGP to exchange routing information with each other, so the routers at, for instance, CE1's site use an IGP only for routing information exchange with other routers at the same site (col. 11 L33-46).

Therefore it is clear that the common or single FIB table above includes EGP forwarding entries for the first and second layer 3 VPNs.

The followings should also be noted:

Rekhtar also discloses: "routers in an internetworking domain under single administration use IGPs to share topological information about the domain, and routers use EGP to share extra-domain topological information. Typically every router runs an IGP (See col. 11 L6-33).

Claim Rejections - 35 USC § 112

The 35 U.S.C. 112, second paragraph rejection presented in the previous office action is withdrawn in light of the response/amendments filed 11/5/07, see pgs. 2-7.

Claim Rejections - 35 USC § 101

The 35 U.S.C. 101 rejection presented in the previous office action is withdrawn due to inclusion of physical storage medium.

The computer-readable storage medium is interpreted as computer readable medium as in applicant specification, pg. 17 [0056] that stores instructions.

In other words, the computer readable storage medium as in the claims is limited to physical storage element, and it does not include any form of signals or energy.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 6-9, 23-25, 30-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Amended Independent claim 6 recites:

A computer implemented method comprising...

...
maintaining on a single network element a single exterior gateway protocol table for the first and second layer 3 VPNs, wherein the single EGP table comprises EGP forwarding entries for the first and second layer 3 VPNs;

maintaining on the single network element a VPN-specific first routing table for the first layer 3 VPN, wherein the first routing table comprises interior gateway protocol (IGP) forwarding entries for the first layer VPN; and

maintaining on the single network element a VPN-specific second routing table for the second layer 3 VPN, wherein the second routing table comprises IGP forwarding entries for the second layer 3 VPN.

Initially, the specification as filed fails to describe the subject matter as set forth above.

In other words, there is no support for the subject matter as encompassed by the recited limitations.

The subject matter above is directed towards the maintenance of a single EGP table for the first and second layer 3 VPNs, and first and second VPN-specific routing tables comprising IGP information for the first and second layer 3 VPNs, i.e. separate IGP tables for each VPNs.

On the other hand, the specification as filed teaches using the separate IGP tables for non-VPN customers, i.e. non-VPN specific, e.g. pg. 5-6 [0021], pg. 7 [0026], pg. 8 [0029], and, using a single IGP table for VPNs, e.g. pg. 9 [0030].

That is, at best, the specification suggests utilizing a single/common EGP table, e.g. pg. 8 [0029], pg. 9 [0030], a separate IGP tables for non-VPN customers, i.e. non-VPN-specific, and/or a single IGP table for VPNs, as set forth above.

Hence, the claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 2-9, 23-25, 30-33 are rejected for the same reasons as set forth in claim 6.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 6-9 and 23-25, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rekhtar et al. (hereinafter Rekhtar, U. S. Patent No. 6,339,595 B1) in view of Alfieri et al. (hereinafter Alfieri, US 7,039,720 B2), and further in view of Jagannath et al. (hereinafter Jagannath, US 7,095,740 B1).

As per claim 6, Rekhtar discloses a computer implemented method comprising:

maintaining a first context for a first layer 3 VPN, the first context including a first value identifying the first layer 3 VPN (col. 18 L28 to col. 19 L60, col. 20 L60-62);

separately maintaining a second context for a second layer 3 VPN, the second context including a second value identifying the second layer 3 VPN, wherein the first and second sets of information corresponds to a first and second customers accessing a backbone and maintained within a single network element of the backbone, and wherein the first and second sets of information include sufficient information to establish the first and second layer 3 VPNs with other network elements of the backbone for the first and second customer respectively (col. 18 L28 to col. 20 L4);

associating the first value with a first route distinguisher (col. 19 L52-56);

associating the second value with a second route distinguisher (col. 18 L12 to col. 19 L4);

maintaining, on a single network element a single/common forwarding table for the first and second layer 3 VPNs, wherein the single forwarding table comprises EGP forwarding entries for the first and second layer 3 VPNs (col. 11 L13-18, col. 33 L29-41: a common table containing FIB entries obtained through EGP routing protocol such as BGP); OR,

maintaining on the single network element a VPN specific a first routing table for the first layer 3 VPN, wherein the first routing table comprises EGP or IGP forwarding entries for

the first layer 3 VPN; and maintaining on the single network element a VPN specific second routing table for the second layer 3 VPN, wherein the second routing table comprises EGP or IGP forwarding entries for the second layer 3 VPN (col. 4 L34-38, col. 6 L41-50, col. 8 L56-67, col. 9 L28-44: general FIB in addition to the separate VPN specific FIB, col. 10 L40-45: routing table separate from FIB, col. 11 L5-44, col. 12 L40 to col. 13 L34).

However, Rekhtar does not disclose maintaining the IGP and EGP forwarding entries in the separate tables (note that Rekhtar teaches utilizing separate routing tables for different VPN as the most convenient approach).

Alfieri explicitly discloses the system for separately maintaining on a single element the IGP forwarding tables and EGP forwarding tables, i.e. separate IGP table and EGP tables (fig. 5, col. 2 L1-34, col. 5 L28 to col. 6 L67).

Therefore, it would have been obvious to a person of ordinary skilled in the art at the time the invention was made to modify Rekhtar in view of Alfieri in order to maintain IGP and EGP forwarding tables separately

One of ordinary skilled in the art would have been motivated because it would have achieved improved performance in large network with large number of routes (Alfieri: col. 1 L18-67, col. 2 L20-30).

However, Rekhtar in view of Alfieri does not disclose maintaining both a single/common EGP forwarding table and maintaining first and second routing table (IGP) for first and second VPN.

Jagannath explicitly discloses maintaining separate routing tables for each VPN (col. 1 L55 to col. 2 L2, col. 4 L30-67).

Therefore, it would have been obvious to a person of ordinary skilled in the art at the time the invention was made to modify Rekhtar and Alfieri in view of Jagannath in order to separately maintain IGP routing tables for each VPN.

One of ordinary skilled in the art would have been motivated because it would have enabled the ISP to completely isolate the traffic of one VPN from another, i.e. provide some kind of security (Jagannath: col. 3 L27-40), and also it provides convenience (Rekhtar: col. 33 L36-40).

As per claim 7, Rekhtar discloses the process of separately maintaining a third context for a non-VPN customer, the third context including a third value identifying the non-VPN customer (col. 9 L32-62) and maintaining a second EGP table for the non-VPN customer (col. 9 L32-44 and col. 11 L15-18).

As per claim 8, Rekhtar discloses the process of updating a set of entries for the first layer 3 VPN in the single EGP table, each of the set of entries indicating the first route distinguisher (col. 11 L5-60 and col. 16 L5-33); mapping the first route distinguisher to the first value (col. 18 L12-67) and indicating the mapped first value in communication about the updated set of entries (col. 19 L5-67, col. 12 L65-67, col. 19 L61 to col. 20 L4).

As per claim 9, Rekhtar discloses the process of maintaining a data structure for the single EGP table, the data structure indicating the association between the first value and the first route distinguisher and between the second value and the second route distinguisher (col. 19 L5 to col. 20 L32, col. 8 L56 to col. 9 L51) and performing mappings between the first value and the first route distinguisher and between the second value and the second route distinguisher with the data structure (col. 11 L45-59, col. 12 L65 to col. 13 L35, col. 18 L58-67, col. 19 L52-56).

As per claim 25, Rekhtar discloses the process wherein the mappings are performed for communications about the single EGP table (col. 19 L5 to col. 20 L3).

As per claims 23-24 and 30-33, they do not teach or further define over the limitations in claims 6-9 and 25. Therefore, claims 23-24 and 30-33 are rejected for the same reasons as set forth in claims 6-9 and 25.

Additional References

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Watt et al., US 7,068,661 B1: Method and Apparatus for providing control information in a system using distributed communicating routing: Discloses a common External Routing table and separate internal routing tables.
- b. Akahane et al., US 2001/0050914 A1: VPN Router: Discloses separate routing table.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAMAL B. DIVECHA whose telephone number is 571-272-5863. The examiner can normally be reached on Increased Flex Work Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Art Unit 2151


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